

What is claimed is:

1. A video storage and retrieval apparatus comprising:
  - a storage that is configured to store a data stream in which identification data with identification information for retrieval incorporated therein is multiplexed along with video data and audio data;
  - a plurality of demultiplexing sections that are configured to demultiplex said data stream stored in said storage to the video data, the audio data, and the identification data;
  - a decoding section that is configured to decode the video data and the audio data, each demultiplexed, to reproduce; and
  - a retrieval section that is configured to retrieve specific video data and specific audio data based on demultiplexed identification data, wherein when occurrences of a reproduction request and a retrieval request overlap in time, said plurality of demultiplexing sections execute demultiplexing to extract the identification data for retrieval from said data stream and demultiplexing to extract the video data and the audio data each for reproduction from said data stream in parallel.
2. The video storage and retrieval apparatus according to claim 1, further comprising:
  - a plurality of demultiplexing sections that are configured to execute demultiplexing to extract the

identification data for retrieval from said data stream;  
and

a plurality of retrieval sections that are configured to retrieve specific video data and specific  
5 audio data based on the identification data,  
wherein said plurality of demultiplexing sections and said plurality of retrieval sections execute retrieval processing on a plurality of data streams in parallel.

3. The video storage and retrieval apparatus according  
10 to claim 1, wherein said data stream is input to the demultiplexing section that executes demultiplexing to extract the identification data for retrieval at a data transfer rate higher than a data transfer rate at which said data stream is input to the demultiplexing section  
15 that executes demultiplexing to extract the video data and the audio data each for reproduction.

4. A video storage and retrieval apparatus comprising:

a demultiplexing section that is configured to demultiplex a data stream in which identification data  
20 with identification information for retrieval incorporated therein is multiplexed along with video data and audio data to the video data, the audio data and the identification data;

a storage that is configured to store the video data,  
25 the audio data, and the identification data, each demultiplexed in said demultiplexing section;

a decoding section that is configured to decode the

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video data and the audio data, each stored in said storage, to reproduce; and

5 a retrieval section that is configured to retrieve specific video data and specific audio data based on the identification data stored in said storage.

5. A video storage and retrieval apparatus comprising:

10 a first demultiplexing section that is configured to demultiplex a data stream in which identification data with identification information for retrieval incorporated therein is multiplexed along with video data and audio data to streams of multiplexed video data and audio data, and the identification data;

15 a storage that is configured to store the streams of multiplexed video data and audio data, and the identification data, each demultiplexed in said first demultiplexing section;

20 a second demultiplexing section that is configured to demultiplex the streams of multiplexed video data and audio data stored in said storage to the video data and the audio data;

a decoding section that is configured to decode the video data and the audio data, each demultiplexed in said second demultiplexing section, to reproduce; and

25 a retrieval section that is configured to retrieve specific video data and specific audio data based on the identification data stored in said storage.

6. A video storage and retrieval apparatus comprising:

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5 a storage that is configured to store a data stream in which identification data with identification information for retrieval incorporated therein is multiplexed along with video data and audio data;

10 5 a plurality of demultiplexing sections that are configured to demultiplex said data stream stored in said storage to the video data, the audio data, and the identification data;

15 a decoding section that is configured to decode the video data and the audio data, each demultiplexed, to reproduce;

20 a retrieval section that is configured to retrieve specific video data and specific audio data based on demultiplexed identification data; and

25 15 a temporary storage, provided between said storage and said decoding section, which is capable of being accessed randomly,

wherein said temporary storage temporarily stores said data stream.

30 7. 20 A video storage and retrieval apparatus comprising:

35 a storage that is configured to store a data stream in which identification data with identification information for retrieval incorporated therein is multiplexed along with video data and audio data;

40 25 a demultiplexing section that is configured to demultiplex said data stream stored in said storage to the video data, the audio data, and the identification

50 55 60 65 70 75 80 85 90 95

data;

a decoding section that is configured to decode the video data and the audio data, each demultiplexed, to reproduce;

5 a retrieval section that is configured to retrieve specific video data and specific audio data based on demultiplexed identification data; and

10 a temporary storage, provided between said demultiplexing section and said decoding section, which is capable of being accessed randomly,

wherein said temporary storage temporarily stores the video data and the audio data each demultiplexed.

8. A video storage and retrieval apparatus comprising:

15 a storage that is configured to store a data stream in which identification data with identification information for retrieval incorporated therein is multiplexed along with video data and audio data;

20 a demultiplexing sections that is configured to demultiplex said data stream stored in said storage to the video data, the audio data, and the identification data;

25 a temporary storage, capable of being accessed randomly, that is configured to temporarily store the video data and the audio data and the identification data each demultiplexed;

a decoding section that is configured to decode the video data and the audio data, each read from said

temporary storage, to reproduce; and

a retrieval section that is configured to retrieve specific video data and specific audio data based on the identification data read from said temporary storage.

5 9. A video storage and retrieval apparatus comprising:

a storage that is configured to store a data stream in which identification data with identification information for retrieval incorporated therein is multiplexed along with video data and audio data;

10 a demultiplexing section that is configured to demultiplex said data stream stored in said storage to the identification data and streams of multiplexed video data and audio data;

a decoding section that is configured to decode the 15 streams of multiplexed video data and audio data to reproduce;

a retrieval section that is configured to retrieve specific video data and specific audio data based on demultiplexed identification data; and

20 a temporary storage, provided between said demultiplexing section and said decoding section, which is capable of being accessed randomly, wherein said temporary storage temporarily stores the streams of multiplexed video data and audio data.

25 10. A video storage and retrieval apparatus comprising:

a storage that is configured to store a data stream in which identification data with identification

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information for retrieval incorporated therein is multiplexed along with video data and audio data;

5 a demultiplexing section that is configured to demultiplex said data stream stored in said storage to the identification data and streams of multiplexed video data and audio data;

a decoding section that is configured to decode the streams of multiplexed video data and audio data to reproduce;

10 a retrieval section that is configured to retrieve specific video data and specific audio data based on demultiplexed identification data; and

15 a temporary storage, provided between said demultiplexing section and said decoding section, which is capable of being accessed randomly,

wherein said temporary storage temporarily stores the demultiplexed identification data and the streams of multiplexed video data and audio data.

11. The video storage and retrieval apparatus according  
20 to claim 6, wherein said data stream stored in said temporary storage is output to said demultiplexing section that executes demultiplexing to extract the video data and the audio data each for reproduction from said data stream, and said data stream is output to said  
25 demultiplexing section that executes demultiplexing to extract the identification data for retrieval from said data stream without being passed through said temporary

storage.

12. A video storage and retrieval apparatus comprising:

a demultiplexing section that is configured to demultiplex a data stream in which identification data 5 with identification information for retrieval incorporated therein is multiplexed along with video data and audio data to the video data, the audio data and the identification data;

10 a storage that is configured to store the video data and the audio data each demultiplexed;

a second storage that is configured to store demultiplexed identification data;

15 a decoding section that is configured to decode the video data and the audio data each read from said storage to reproduce; and

a retrieval section that is configured to retrieve specific video data and specific audio data based on the identification data read from said second storage.

13. A video storage and retrieval apparatus comprising:

20 a first demultiplexing section that is configured to demultiplex a data stream in which identification data with identification information for retrieval incorporated therein is multiplexed along with video data and audio data to the identification data and streams 25 of multiplexed video data and audio data;

a storage that is configured to store the streams of multiplexed video data and audio data

a second storage that is configured to store demultiplexed identification data;

a second demultiplexing section that is configured to demultiplex the streams of multiplexed video data and 5 audio data read from said storage to the video data and the audio data;

a decoding section that is configured to decode the video data and the audio data, each demultiplexed, to reproduce; and

10 a retrieval section that is configured to retrieve specific video data and specific audio data based on the identification data read from said second storage.

14. The video storage and retrieval apparatus according to claim 12, wherein said second storage is comprised 15 of a recording device which is capable of being accessed randomly.

15. A video storage and retrieval apparatus comprising:

a demultiplexing section that is configured to demultiplex a data stream in which identification data 20 with identification information for retrieval incorporated therein is multiplexed along with video data and audio data to the video data, the audio data and the identification data;

a retrieval section that is configured to select 25 a period matching a pre-registered retrieval condition from said data stream based on demultiplexed identification data;

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a storage that is configured to store data corresponding to the selected period of the video data and the audio data each demultiplexed; and

5 a decoding section that is configured to decode the video data and the audio data, each stored in said storage, to reproduce.

16. A video storage and retrieval apparatus comprising:

a first demultiplexing section that is configured to demultiplex a data stream in which identification data 10 with identification information for retrieval incorporated therein is multiplexed along with video data and audio data to the identification data and streams of multiplexed video data and audio data;

15 a retrieval section that is configured to select a period matching a pre-registered retrieval condition from said data stream based on demultiplexed identification data;

20 a storage that is configured to store data corresponding to the selected period of the streams of multiplexed video data and audio data;

a second demultiplexing section that is configured to demultiplex the streams of multiplexed video data and audio data stored in said storage to the video data and the audio data; and

25 a decoding section that is configured to decode the video data and the audio data, each demultiplexed, to reproduce.

17. A video storage and retrieval apparatus comprising:  
a demultiplexing section that is configured to  
demultiplex a data stream in which identification data  
with identification information for retrieval  
incorporated therein is multiplexed along with video  
data and audio data to the video data, the audio data  
and the identification data;

a second storage that is configured to store  
demultiplexed identification data;

10 a retrieval section that is configured to select  
a period matching a pre-registered retrieval condition  
from said data stream based on the identification data  
stored in said second storage;

a storage that is configured to store data  
15 corresponding to the selected period of the video data  
and the audio data each demultiplexed; and

a decoding section that is configured to decode the  
video data and the audio data, each stored in said storage,  
to reproduce.

20 18. A video storage and retrieval apparatus comprising:  
a first demultiplexing section that is configured  
to demultiplex a data stream in which identification data  
with identification information for retrieval  
incorporated therein is multiplexed along with video  
25 data and audio data to the identification data and streams  
of multiplexed video data and audio data;

a second storage that is configured to store

demultiplexed identification data;

a retrieval section that is configured to select a period matching a pre-registered retrieval condition from said data stream based on the identification data  
5 stored in said second storage;

a storage that is configured to store streams corresponding to the selected period of the streams of multiplexed video data and audio data;

10 a second demultiplexing section that is configured to demultiplex the streams of multiplexed video data and audio data stored in said storage to the video data and the audio data; and

15 a decoding section that is configured to decode the video data and the audio data, each demultiplexed, to reproduce.

19. The video storage and retrieval apparatus according to claim 1, wherein said data stream is an MPEG stream conforming to MPEG as a moving picture coding standard.

20. The video storage and retrieval apparatus according to claim 19, wherein in said MPEG stream, each of the video data, the audio data and the identification data is constructed in packets, and said packets are multiplexed as Packetized Elementary Stream.

25. The video storage and retrieval apparatus according to claim 19, wherein in said MPEG stream, the identification data is contained in a stream header to include stream information, and is multiplexed along

with the video data and the audio data.

22. The video storage and retrieval apparatus according to claim 19, wherein in said MPEG stream, the identification data is stored as a private descriptor 5 in a PAT (Program Association Table), a PMT (Program Map Table) or a CAT (Conditional Access Table), and is multiplexed along with the video data and the audio data.

23. The video storage and retrieval apparatus according to claim 19, wherein in said MPEG stream, the 10 identification data is stored as private data section, and is multiplexed along with the video data and the audio data.

24. A video retrieval server apparatus comprising:

15 a first demultiplexing section that is configured to demultiplex a data stream in which identification data with identification information for retrieval incorporated therein is multiplexed along with video data and audio data to streams of multiplexed video data and audio data and the identification data;

20 a retrieval section that is configured to select a period matching a retrieval condition received from a video reproducing terminal via a transmission medium from said data stream based on demultiplexed identification data;

25 a storage that is configured to store data corresponding to the selected period of the streams of multiplexed video data and audio data;

a transmission section that is configured to transmit said streams of multiplexed video data and audio data stored in said storage to said video reproducing terminal via said transmission medium.

5 25. A video reproducing terminal that provides a retrieval request to the video retrieval server apparatus according to claim 24, comprising:

a transmission section that is configured to transmit a retrieval condition to the video retrieval 10 server apparatus via a transmission medium;

a reception section that is configured to receive streams of multiplexed video data and audio data as a retrieved result from said video retrieval server apparatus;

15 a second demultiplexing section that is configured to demultiplex received streams of multiplexed video data and audio data to the video data and the audio data; and

20 a decoding section that is configured to decode the video data and the audio data, each demultiplexed, to reproduce.

26. A video retrieval system comprising:

a video retrieval server apparatus according to claim 24;

25 a video reproducing terminal that provides a retrieval request to the video retrieval server apparatus; and

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a transmission medium that connects said video retrieval server apparatus and said video reproducing terminal, said transmission medium being a communication network, a broadcasting network or thereof,

5 wherein said video reproducing terminal has a transmission section that is configured to transmit a retrieval condition to the video retrieval server apparatus via a transmission medium, a reception section that is configured to receive streams of  
10 multiplexed video data and audio data as a retrieved result from said video retrieval server apparatus,

a second demultiplexing section that is configured to demultiplex received streams of multiplexed video data and audio data to the video data and the audio data,  
15 and a decoding section that is configured to decode the video data and the audio data, each demultiplexed, to reproduce.

27. A video storage and retrieval method comprising:

storing a data stream in which identification data  
20 with identification information for retrieval incorporated therein is multiplexed along with video data and audio data in a recording medium;

reading the data stream as an object to be reproduced and the data stream as an object to be  
25 retrieved from said recording medium when occurrences of a reproduction request and a retrieval request overlap in time;

demultiplexing in parallel both data streams to the video data, the audio data and the identification data; and

decoding the video data and the audio data, each  
5 demultiplexed from the data stream as the object to be  
reproduced, to reproduce, while retrieving specific  
video data and specific audio data based on the  
identification data demultiplexed from the data stream  
as the object to be retrieved.

10 28. A video storage and retrieval method comprising:

demultiplexing a data stream in which identification data with identification information for retrieval incorporated therein is multiplexed along with video data and audio data to the video data, the audio data, and the identification data;

reading the identification data contained in the data stream as an object to be retrieved in parallel with the video data and the audio data each as an object to be reproduced from said recording medium when 20 occurrences of a reproduction request and a retrieval request overlap in time; and

decoding the video data and the audio data, each read from said recording medium, to reproduce, while retrieving specific video data and specific audio data based on the identification data.

29. A video storage and retrieval method comprising:

demultiplexing a data stream in which

identification data with identification information for retrieval incorporated therein is multiplexed along with video data and audio data to streams of multiplexed video data and audio data, and the identification data;

5           storing the streams of multiplexed video data and audio data, and the identification data in a recording medium;

10           reading the identification data contained in the data stream to be retrieved in parallel with the streams of multiplexed video data and the audio data as objects to be reproduced from said recording medium when occurrences of a reproduction request and a retrieval request overlap in time; and

15           decoding the video data and the audio data, each demultiplexed from the streams, to reproduce, while retrieving specific video data and specific audio data based on the identification data.

30.          A video storage and retrieval method, comprising:

20           storing a data stream in which identification data with identification information for retrieval incorporated therein is multiplexed along with video data and audio data in a recording medium which is capable of been accessed only sequentially;

25           transferring the data stream as an object to be reproduced and/or the data stream as an object to be retrieved to a temporary storage from said recording medium;

reading the data stream as the object to be reproduced and the data stream as the object to be retrieved from said temporary storage when occurrences of a reproduction request and a retrieval request overlap  
5 in time; and

demultiplexing in parallel both data streams to the video data, the audio data and the identification data;

10 decoding the video data and the audio data, each demultiplexed from the stream as the object to be reproduced, to reproduce, while retrieving specific video data and specific audio data based on the identification data demultiplexed from the data stream as the object to be retrieved.

31. A video storage and retrieval method, comprising:

15 demultiplexing a data stream in which identification data with identification information for retrieval incorporated therein is multiplexed along with video data and audio data to the video data, the audio data and the identification data;

20 selecting a period matching a pre-registered retrieval condition from said data stream based on demultiplexed identification data;

storing data corresponding to the selected period of the video data and the audio data each demultiplexed;

25 and

decoding the video data and the audio data, each stored, to reproduce.